

Remarks:

Reconsideration of the application is requested.

Claims 1-9 are now in the application. Claims 1 and 4 have been amended. Claims 6-9 have been added.

Support for the subject-matter of newly entered claim 6 can be found on page 10, lines 21-24, of the specification.

Support for the subject-matter of newly entered claim 7 can be found in claim 1 as originally filed.

Support for the subject-matter of newly entered claim 8 can be found on page 8, line 23, through page 9, line 2, of the specification ("The piezoelectric actuator 1 is prestressed ... to achieve this, the hollow body or mould 2 is manufactured from a correspondingly elastic material").

Support the subject-matter of newly entered claim 9 can be found on page 8, lines 1-3, of the specification.

In the second paragraph on page 2 of the above-identified Office action, claim 1 has been rejected as being anticipated by *Miyoshi* (US 5,239,223) under 35 U.S.C. § 102.

In the third paragraph on page 2 of the Office action, claims 1, 2, and 5 have been rejected as being anticipated by *Onishi* (JP 55-134990) under 35 U.S.C. § 102.

In the third paragraph on page 3 of the Office action, claim 3 has been rejected as being obvious over *Miyoshi* or *Onishi* in view of *Kaji* (US 4,354,131) under 35 U.S.C. § 103.

In the second paragraph on page 4 of the Office action, claim 4 has been rejected as being obvious over *Miyoshi* or *Onishi* in view of *Takahashi* (US 4,943,004) under 35 U.S.C. § 103.

The rejections have been noted and claim 1 has been amended reciting "a piezoelectric actuator with a permanent and fixed prestress, said piezoelectric actuator being contacted by said hollow body, said top cover plate, and said bottom cover plate" in an effort to even more clearly define the invention of the instant application. Support for the changes is found on page 10, lines 2-3, of the specification ("the prestress of the piezoelectric actuator is permanently fixed") and on page 8, lines 3-4 of the specification ("As shown in Fig. 1, the hollow body or mould 2 contacts the piezoelectric actuator 1").

Before discussing the prior art in detail, it is believed that a brief review of the invention as claimed, would be helpful.

Claim 1 as amended calls for, inter alia:

an elastic hollow body with an elasticity;

a top cover plate connected to said hollow body by one of welding and flanging, and a bottom cover plate connected to said hollow body; and

a piezoelectric actuator with a permanent and fixed prestress, said piezoelectric actuator being contacted by said hollow body, said top cover plate, and said bottom cover plate.

In col. 4, lines 25-26, *Miyoshi* calls for "the metal case 5, having an internal diameter **longer** than an outer diameter of the electrostrictive effect element 1" (emphasis added). Also the drawings in *Miyoshi* clearly show that the "electrostrictive effect element 1" is **not** contacted by the "metal case 5".

Clearly, *Miyoshi* does not show a prestressed piezoelectric actuator being **contacted** by said **hollow body**, said top cover plate, and said bottom cover plate, as recited in claim 1 of the instant application. Therefore, the invention as recited in claim 1 of the instant application is believed not to be anticipated by *Miyoshi*.

The English Abstract of *Onishi* states that the purpose of *Onishi* is to "facilitate **fabrication** of a piezoelectric element unit." Unfortunately, the English Abstract of *Onishi* is somewhat confusing and therefore the disclosure is not clear. As far as Applicants were able to ascertain, the fabrication process disclosed in *Onishi* has the purpose of pressure-attaching the "protrudent coils 6c" to the "outside surface of piezoelectric elements". After fabrication the "take-out cylinder 6d is used to remove the piezoelectric element from the "insulating case 6". Consequently, any prestressing of the piezoelectric element in *Onishi* is not permanent but only applied during fabrication.

Clearly, *Onishi* does not show a piezoelectric assembly with a piezoelectric actuator with a **permanent and fixed** prestress, as recited in claim 1 of the instant application. Therefore, the invention as recited in claim 1 of the instant application is believed not to be anticipated by *Onishi*.

The inventive concept of the invention of the instant application is to have a permanently prestressed piezoelectric actuator surrounded and contacted by a hollow body and closed on both ends by cover plates forming a single structural unit. The prestress of the piezoelectric actuator is permanently fixed during production of the structural unit, and therefore the piezoelectric actuator does not need to be prestressed

again every time the piezoelectric actuator is removed and installed. The references neither disclose or suggest the invention as recited in the claims. Therefore, the invention as recited in claim 1 of the instant application is also believed not to be obvious over the references.


It is accordingly believed to be clear that neither *Miyoshi* nor *Onishi* show the features of claim 1. Claim 1 is, therefore, believed to be patentable over the art and since claims 2-8 are ultimately dependent on claim 1, they are believed to be patentable as well.

In view of the foregoing, reconsideration and allowance of claims 1-8 are solicited.

Petition for extension is herewith made. The extension fee for response within a period of three months pursuant to Section 1.136(a) in the amount of \$ 920.00 in accordance with Section 1.17 is enclosed herewith.

Please charge any other fees which might be due with respect to Sections 1.16 and 1.17 to the Deposit Account of Lerner and Greenberg, P.A., No. 12-1099.

Respectfully submitted,


For Applicants

MARKUS NOLFF
REG. NO. 37,006

MN:cgm

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Lerner and Greenberg, P.A.
Post Office Box 2480
Hollywood, FL 33022-2480
Tel: (954) 925-1100
Fax: (954) 925-1101

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Version with markings to show changes made:

Page 7, line 20, through page 8, line 12, with --

Referring now to the figures of the drawings in detail and first, particularly, to Fig. 1 thereof, there is seen a piezoelectric actuator 1 which includes a plurality of individual piezoelectric elements stacked one upon the other. The piezoelectric actuator 1 is introduced into a hollow body, mould, shape or form 2. The hollow body or mould 2 is, for example, a sleeve with an annular cross section or a rectangular-section tube profile. The hollow body or mould 2 is preferably matched in shape to the shape of the piezoelectric actuator 1. As shown in Fig. 1, the hollow body or mould 2 contacts the piezoelectric actuator 1. A bottom end of the piezoelectric actuator 1 rests on a bottom cover plate 4, which is force-lockingly and/or form-lockingly connected to the hollow body or mould 2. In this illustrative embodiment, the bottom cover plate 4 is form-lockingly connected to the hollow body or mould 2 by a weld 5. A form-locking connection is one which connects two elements together due to the shape of the elements themselves, as opposed to a force-locking connection, which locks the elements together by force external to the elements. --

Claim 1 (amended). A piezoelectric assembly, comprising:

an elastic hollow body with an elasticity;

a top cover plate connected to said hollow body by one of welding and flanging, and a bottom cover plate connected to said hollow body; and

a piezoelectric actuator with a permanent and fixed prestress,
[having an extension direction, said actuator inserted into said hollow body in said extension direction between said cover plates for prestressing said actuator] said piezoelectric actuator being contacted by said hollow body, said top cover plate, and said bottom cover plate.

Claim 4 (amended). The piezoelectric assembly according to claim 1, wherein said hollow body has apertures at least partially determining [an] said elasticity of said hollow body.